the way toward exciting fields of research.

The complexity of the book itself should warn prospective earth scientists that those who wish to make real advances in the field will require not only the common sense, keen powers of observation, lively imagination, and strong backs of the traditional geologist but a thorough grounding in mathematics, physics, and chemistry as well.

An earlier work by Garrels, *Mineral Equilibria*, forms the core of the present work, which, because of revision and the addition of new material, is about twice the size of the earlier book and is considerably more than twice as valuable.

In addition to the revised discussion of mineral-solution equilibria at 25°C and atmospheric pressure, a chapter on the effect of temperature and pressure variations on these equilibria has been added to broaden the scope of the book. A much expanded discussion of solution chemistry includes such unique material as the role of complex ions in natural waters, surface chemistry, and the use of ion sensitive electrodes for ion activity measurements. Much of this work is based on research by Garrels and his co-workers.

The introductory chapters on the fundamental laws of solution chemistry and the problems at the end of each chapter have been added to make the book more useful as a textbook. The material remains very specialized and is too advanced for the average student who does not have previous training in physical chemistry. Few graduate geology departments could afford the luxury of a course for which this book would be useful as a primary text. The book has little continuity and is arranged more like a symposium volume than a unified work. This is no drawback to its use as a superior reference book.

The individual chapters are very well written, even engagingly so, and include historical notes and complete bibliography. The many illustrations and problems deal with geologic systems and are likely to be more interesting, even to the nongeologist, than the examples used in most textbooks on the subject. The careful editing and high quality of the book are typical of those published in the Harper Geoscience Series.

DAVID L. THURBER
Lamont Geological Observatory, Palisades, New York

Human Genetics

To inform and to recruit are presumably the aims of every textbook. Most manage to serve the former end with greater or lesser competence, but recruitment is quite another matter. Success in this instance is directly proportional to the intellectual excitement the author succeeds in instilling in the reader. Some authors capture the excitement of their sciences; others do not. Maurice Whittinghill has not. Wherein he has failed is not immediately obvious, but one is eminently aware that his book, **Human Genetics and Its Foundations** (Reinhold, New York, 1965. 447 pp., $8.95), is not as entertaining to read as Curt Stern's *The Principles of Human Genetics*, for example, nor does one sense that element of expertness which typifies Knudson's *Genetics and Disease*. These observations notwithstanding, Whittinghill's *Human Genetics and Its Foundations* will undoubtedly find a niche amidst the growing array of useful textbooks in human genetics. It is not, however, a book for the specialist or even the serious student of human heredity. It is more an effort to teach the basic principles of genetics, using illustrations drawn from man, and the general approach might be characterized as "classical."

Whittinghill elects to develop his subject under four headings: Monohybrid Genic Segregation; Regular Chromosomal Behavior; Biological Interactions; and Mutation and Evolution. The nature of the treatment of these major topics is adumbrated by enumerating the chapters in the section Biological Interactions, where one finds chapters entitled "Biochemical pathways from the genes," "Sex influences upon phenotypic differences," "Reduced penetrance and varied expressivity," "Marker genes and disease risks," "Prenatal interactions," and, finally, "Heredity, environment, and phenotype." The material subsumed under each of these chapters, as well as that in the other sections, is, in general, adequately presented and largely error-free. There are, however, certain aspects of the presentation which do not please me. There is, for example, a preoccupation with diagrams that sometimes serve to confuse rather than enlighten. The MN-locus is constantly referred to as the Landsteiner locus—a convention which can hardly be called universal. Moreover, might not the ABO, P, and Rh loci equally well be designated as "the Landsteiner locus"? At a time when the content of human genetics beggars easy comprehension, it is patently unfair to the student to clutter his mind with "regionalisms." Finally, Whittinghill's language occasionally borders on the picaresque, as witness the following remark—"Among the census records of 5,000,000 births there *lurks* a slight influence of the age of the father on the sex ratio of offspring." But, there are a goodly number of fine features associated with the book which warrant mention. For example, the reader is supplied with a large number of problems of graded complexity, and he is directed to a generally well-selected and representative cross-section of the literature, particularly that of the last decade. And clearly, Whittinghill has made a concerted effort to make the book timely.

WILLIAM J. SCHULL
Department of Human Genetics, University of Michigan

The Sugawara Volume

Professor Ken Sugawara, to whom the volume **Recent Researches in the Fields of Hydrosphere, Atmosphere, and Nuclear Geochemistry** (Maruzen, Tokyo, Japan, 1965. vi + 404 pp.) is dedicated on the occasion of his 65th birthday, is a Japanese chemist who has worked extensively in the fields of limnology, oceanography, atmospheric chemistry, and geochemistry, and who has devoted a good deal of his time to international organizations concerned with these disciplines. The editors, Yasuo Miyake and Tadashiro Koyama, and the committee that planned the volume have therefore presumably invited contributions in all these fields, so the range of topics covered is broad.

Among the 25 articles, six deal with limnological subjects. These include two articles on the preservation of chlorophyll derivatives in sediments; one article is by Gorham and Sanger, the other by Belcher and Fogg. The latter is especially significant in that it describes a method for deducing the previous trophic state of lakes from the "chlorophyll"/epiphasic carotenoid ratio of their sediment extracts. It would be worthwhile to test this procedure on lakes of known recent eutrophication. Of the two articles on photosynthesis, one by Saijo and Saka-